April 9, 2010

Dear Team America Contestant,

Congratulations! Your team's performance on your local qualification flight has earned you one of the 100 invitations to attend the Team America Rocketry Challenge fly-offs the weekend of May 14-16, 2010 in The Plains, VA. There were 669 teams entered, covering 45 of the 50 states, and yours was one of the 100 best. You can be proud of your achievements in aerospace design and rocketry.

Please fill out and return **ALL** forms in the Attendance Confirmation & Registration Materials package (Appendix A.) Please be sure to **fax a copy of the confirmation form (found in Appendix A) and mail the original** forms to us**. If we do not receive all forms from your team by Friday, April 23, 2010, we will have to offer your spot to one of the alternate teams.** If you will not be able to attend the fly-offs, please let us know as soon as possible so that we may offer your spot to one of these alternate teams. Remember that the exact model you fly at the fly-off must have previously been test-flown successfully.

The enclosed information should answer your questions about procedures, lodging, and other aspects of the fly-off. It also addresses many of the questions that we have been receiving from teams over the last several months concerning event rules, legal rocket designs, etc. Please read the entire document carefully. This contestant letter explains and interprets things from the contest rules that have led to questions from contestants. In case of conflict, the official rules take precedence.

Please contact us at rocketcontest@aia-aerospace.org if there are things that you need to know about registration that are not covered by this letter. Check our website www.rocketcontest.org and the NAR website www.nar.org for updates on this event. If you have questions, please ask them by posting a question at http://groups.yahoo.com/group/NARTARC (NAR/TARC Yahoo Group), our online forum. We check this every day, and would like to answer your questions in public for everyone to benefit.

Please fax a copy of the confirmation page (in Appendix A) and mail the original forms

FAX: 703-358-1133

Mailing address:
Aerospace Industries Association
Team America Rocketry Challenge
1000 Wilson Blvd. #1700
Arlington, VA 22209
ATTN: Audrey Koehler

We look forward to meeting you at the fly-offs!

Sincerely,

Audrey Koehler
TARC Manager
Aerospace Industries Association (AIA)

Trip Barber
President
National Association of Rocketry (NAR)

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IMPORTANT TEAM AMERICA CONTESTANT INFORMATION

ATTENDANCE

Teams that are selected to attend the fly-off must confirm their participation by returning the enclosed confirmation form to Team America Headquarters, so that we receive it no later than **Friday, April 23, 2010**. "Alternate" teams will be notified no later than Tuesday, April 27, 2010. This will be based on how many spots become available from "primary" teams being unable to confirm their attendance by the deadline. We ask that any team that attends do so with an adult chaperone, preferably the supervising teacher, and at least one of the students; it is not mandatory that every student team member attend, but the more the better.

TEAM MEMBERSHIP CHANGES.

You may not add team members after your initial qualification flight attempt. Please notify us in writing if you choose to drop team members. All team members who are registered as of the date of the fly-off (regardless of whether they attend the fly-off) will share equally in any prizes awarded to a winning team. Under most circumstances, all team members on the final team must have made a contribution to the designing, building, and/or launching of the team's entry.

SPECIAL AWARDS

In addition to the prizes and places based on rocket flight performance, 4 teams will be selected by judges who are observing all the teams on the field on the day of the Finals for receipt of plaques at the end-of-day awards ceremony for the following special characteristics:

Best Rocket Craftsmanship
Best-Dressed Team (uniform/costume)
Spirit of TARC (combination of teamwork, sportsmanship, team spirit)
Best Design (includes overall approach to mission)

T-SHIRTS

We have designed a NEW T-shirt this year especially for the finalists in the Team America Rocketry Challenge and available only to team members and supervisors for these teams. It includes a Team America Rocketry Challenge logo specifically designed for the fly-off. It is available for advance-order only, at a price of $15. If you wish to purchase T-shirts, please indicate the number (by size) on the confirmation form and enclose payment (payable to "AIA") when you send this form in. Shirts that you order will be issued upon arrival, at the registration tables that will be set up at the contestants' pre-flight briefing on Friday evening (explained below) and at the flying site on Saturday.

POST CONTEST BARBEQUE

We will end the day with an optional barbeque dinner after the award ceremony where teams, NAR and AIA range crew volunteers, and special guests can relax together after a busy day of flying. Much of the cost of this dinner event is subsidized by our sponsors, but there is a small per-person charge of $20 for anyone who attends the BBQ in addition to registered team members and the team supervisor/adult chaperone (one per team). If you wish to purchase tickets for family members or other guests, please indicate on the confirmation form the number of additional tickets needed and include that amount in your team payment. Tickets will be included with your registration packet.

DIRECTIONS

Local Transportation. Teams must provide their own transportation (rental vehicle) to get from the motel to the launch site, and to/from any airport. The nearest major airport to the flying site and to the motels in Manassas is Washington Dulles (IAD), 17 miles away. Baltimore-Washington International (BWI) is 70 miles from the motels and Reagan National (DCA) is about 35 miles. In planning your travel, please keep in mind that I-66 westbound from the DC area to Manassas and beyond is very heavily congested and very slow-moving by 2 PM on Fridays.

Motels. Three of the designated Team America motels with our group reservations are all at I-66 exit 47 in Manassas, VA. Take Highway 234 (Sudley Road) south at this exit. The motels are within the first two blocks after the exit. There are many restaurants in this same area. The fourth hotel is in the town of Warrenton, VA. This is closer to the launch site than Manassas but a bit further away from the Friday evening meeting site.

Friday Evening Contestant Briefing & Registration. The Friday evening all-contestant registration and briefing is at 7:30 PM at the auditorium of Battlefield High School, 15000 Graduation Drive, Haymarket, VA 20169, about 9 miles from the Manassas motels. This could be up to a 30-minute drive on a Friday evening on I-66. To get there, go west on Interstate 66 from your Manassas motel toward the launch site (the traffic in this direction is SLOW on Friday evenings!). 7 miles down I-66, take Exit 40. Turn right (north toward Leesburg) at this exit and proceed 1.9 miles to the third stoplight. Turn right at this light (Dominion Valley Drive will be to your left at this light) onto Graduation Drive and the high school is immediately on your left. The entrance to the auditorium will be marked with a "Team America" banner. This is the same location as last year's briefing.

Saturday Launch Site. The launch site is Great Meadow Field Events Center, just south of the tiny town of The Plains, Virginia. To get there, take I-66 exit 31 (which is 16 miles west of the Manassas motels, toward Front Royal), turn left on Highway 245 (away from the town of The Plains and toward Old Tavern) and follow the signs about 2 miles to Great Meadow, which will be on your left.

TRAVEL AND LODGING.

Funding. There are no additional event fees for those teams selected for the fly-offs, however travel expenses to attend and purchase of the optional T-shirts are the responsibility of each team. The entire team does not necessarily have to come to the fly-off, although we expect at least one member plus the supervising teacher to attend.

Sponsorship. We are working with the aerospace industry, encouraging them to sponsor teams and help defray their travel costs for attending the fly-offs. We are providing the name and phone/e-mail of each team's teacher to these sponsors and they will make direct contact with the teams that they wish to sponsor. There is no guarantee that every team will be sponsored, so we recommend that teams solicit sponsorships from businesses in their communities. Remind your sponsors that they may get national media coverage if you win the contest!

Launch Site Parking. There is a huge amount of parking at the launch site, all of it close to the launch range. A local volunteer group will manage access to parking, which is free.

Motels. Teams are responsible for making their own lodging arrangements. We have reserved blocks of rooms (mostly non-smoking with two beds) at the following motels. These are reserved under the group name "Team America Rocketry Challenge" for the nights of Friday, May 14 and Saturday, May 15. Please call and book early, as these rooms will be released on April 29 if not reserved by then. Those needing rooms must call in and reserve using individual credit cards. Tax on rooms adds 10% to the rates below. All motels are within two blocks of each other and are surrounded by restaurants and shopping. If you wish to make hotel reservations at places other than those listed below, you should pick among the many hotels that are near I-66 exit 47 in Manassas.

<u>At I-66 Exit 47A (Highway 234/Sudley Road South) in Manassas</u>:

Best Western Battlefield Inn - 10820 Balls Ford Rd., Manassas, VA 20109 - (703) 361-8000
50 rooms - $99.00 + tax

Quality Inn Manassas - 10653 Balls Ford Road, Manassas, VA 20109 - (703) 368-2800
55 rooms - $79.99 + tax

Red Roof Inn Manassas - 10610 Automotive Drive, Manassas, VA 20109 - (703) 335-9333
40 rooms - $82.99 + tax

If these room blocks are filled there are three other motels also located at this exit: Comfort Suites (703)686-1100; Hampton Inn (703)369-1100; and Holiday Inn Manassas Battlefield (800)345-8082. There is also a Super 8 Motel at this exit, which should be avoided based on previous years' experience.

<u>At I-66 Exit 47B (Highway 234 North) in Manassas</u>:

Three other slightly more expensive motels are also located at this exit: Courtyard by Marriott (703)335-1300; Country Inn & Suites by Carlson (703)393-9797; and Fairfield Inn & Suites by Marriott (703)393-9966.

In Warrenton, VA: This is a small town 6 miles from the flying site (closer than Manassas) but farther from the Friday evening meeting site than Manassas. This hotel is near the intersection of US highways 15, 17, and 29 and there are restaurants nearby:

Comfort Inn - 7379 Comfort Inn Drive, Warrenton, VA 20187 - (540)349-8900
20 rooms - $79.99 + tax

Food Service. There are many restaurants within 2 blocks of any of the motels. A free pastry breakfast will be available to team members of early-flying teams on the flying field from 7:30 AM to 9:00 AM on the day of the fly-offs. There will be a food and beverage vendor on the field for lunch for both contestants and spectators. Student contestants and team supervisors with credential badges will receive a free lunch that will be available starting at 11 AM, and a free ice cream dessert at an "ice cream social" that will start at 2:30 PM. Punches will be made in TARC credential badges for each of these; there are no meal "tickets". There will be free water available throughout the day at the NAR Information tent next to the entrance gate to the flying area of the field. Please do not bring cooking devices to the field, but coolers are OK – no glass bottles. We will end the day on Saturday with a barbeque dinner after the award ceremony where teams, NAR and AIA range crew volunteers, and VIP's can relax together after a busy day of flying.

SCHEDULE

Friday Daytime. The staff of Team America will be out at the launch site at Great Meadow from 9 AM until 4 PM on Friday, setting up the flying range and making other preparations for the flyoff. Teams may come out to look the field over during this time, but NO TEST FLIGHTS can be supported and there are no other test-flying sites available locally.

Friday Contestant Briefing. Teams should plan to arrive in Manassas, Virginia on Friday, May 14, in time to be at Battlefield High School in Haymarket (9 miles from the hotels in Manassas) well before 7:30 PM. There will be a 7:30 PM to 9:00 PM all-contestant briefing at the auditorium of this school. Event registration packets, rocket engine orders that were made in advance to the official TARC on-site vendor Hangar11 Hobbies, and rockets shipped ahead to Aurora Flight Sciences to be held for teams, will all be available for pickup at this event starting ninety minutes before the briefing, at 6:00 PM, and will also be available on the flying site Saturday morning. We will make and announce the decision at the Friday contestant briefing if the weather forecast for Saturday is so unfavorable (heavy rain or wind above 20 miles per hour) that the flyoff must be postponed to Sunday.

Saturday Flying Schedule. Teams assigned the first fly-off "launch window" time slot (6:30 AM check-in opening, 8:30-9:30 AM liftoffs) should plan to be at the flying field by 6:30 AM on the day that flying occurs (May 15). See "Time Management" below for more explanation of these "launch windows". Other teams may choose to arrive later than this, but each team should arrive at least an hour before its assigned rocket check-in time. All teams should plan to remain at the flying site until the conclusion of the award ceremony at 6 PM on fly-off day. The barbecue after the award ceremony should end by 8 PM Saturday. Teams should be flexible enough in their plans to be able to stay for a May 16 (Sunday) fly-off if bad weather on Saturday forces postponement of the planned flight day of May 15.

TEAM PRESENTATION COMPETITION

Aerospace engineers must not only do good design, construction, and flight testing work, they must be able to communicate to others what they have done and how they did it. This year we are again offering an optional presentation competition to interested Finals teams. This competition will be limited to twelve finalist teams that will be selected from those that submit a draft presentation by May 1 as described below. Finalists will be announced no later than Monday, May 10. Presentations will be held between 1:30 PM and 3:30 PM Saturday during the Finals; any teams that are presenting but that also are likely to make the second (flyoff) round of the Finals will go first so they have time to also go fly.

Participating teams will be asked to give a six-minute presentation on their TARC rocketry project experience to a panel of judges and an audience of aerospace industry sponsors, then handle a 2-minute question and answer session with the judges. Judging will be based on the 4 criteria listed below. Presentations must have an electronic component (which will be the only component used for preliminary evaluation). Powerpoint is preferred; these may be converted to Adobe Acrobat files to reduce digital size for transmission.

Limitations: Teams that volunteer for the presentation must have three or more members attending the Finals, and at least three different student members of the team must have a speaking role in the presentation.

Judging criteria: The following equally-weighted criteria will be used by the judges:

- Design and construction process – How was the rocket designed? How were the dimensions, materials, and motors selected? How was the rocket built?
- Teamwork – How did each member of the team contribute to the rocket design, construction, flight testing, or other elements of the team's operation, and to the presentation?
- Flight testing process – How did the team use flight testing to refine the design and make adjustments that resulted in a great score?
- Lessons learned – What lessons did the team learn from their TARC experience about how to do an engineering design and construction project, and how would they change their approach for a future TARC entry?

Submitting: **Teams wishing to participate should submit their initial presentations electronically (only!) to narvp@nar.org by 5:00 PM (Eastern Time) Friday, April 30, 2010.** The size of this submission must not exceed 1 megabyte. From these submissions, 12 finalists and two alternates will be notified by Monday, May 10, 2010. Teams may (and are encouraged to) revise their report up until the date of the finals.

APPROVED ROCKET ENGINES.

Your rocket must be powered only by commercially-made model rocket engines that are safety-certified by the NAR and listed on the **final** NAR Engine Certification List attached to this letter. These engines must be F power level and below, with no more than a combined total impulse of 80.0 Newton-seconds if more than one engine is used.

Engine Vendor Support. Hangar11 Hobbies will be onsite at the fly-offs as a rocket engine vendor. They have both Estes engines of all types and most of the E and F engines that Aerotech and other manufacturers now have in production. **IF YOU CANNOT TRAVEL BY AUTO TO THE FINALS WITH YOUR ENGINES (see below) YOU SHOULD ORDER THEM IN ADVANCE FROM HANGAR11, FOR DELIVERY ON-SITE AT THE FLY-OFF.** Do not assume that Hangar11 will have engines in stock on the field that you did not order in advance. They will be the only on-site vendor. Hangar11 can be reached at:

Hangar11 Hobbies, Inc.
24 Hallock Drive Suite 1
Washingtonville, NY 10992
www.hangar11.com
(845) 926-1959

Transportation. It is ILLEGAL to put model rocket engines, igniters, or other pyrotechnic materials in your baggage on an airplane, **DO NOT TRY THIS**. It is also illegal to ship a rocket motor by UPS or USPS without disclosing to the shipper that you are doing this, and these shippers will not accept motors for shipment by private individuals.

Shipping Rockets and Launch Equipment. You may ship your model rockets and launching equipment to us and they will be given to you at the contestant briefing on May 16. A vendor with the proper license may also ship engines that you have ordered to this location. **Make sure you use a shipper that utilizes a tracking system to confirm delivery of your rocket.**

Trip Barber/Team America
c/o Aurora Flight Sciences Corporation
9950 Wakeman Dr.
Manassas VA 20110
Hold for Team America Team #_____, _____ High School

FLY-OFF PROCEDURES.

Preparation Area. There will be a marked-off area at the launch site close to the flying range that is designated for "teams only". This is where your team should go, and park, upon arrival on the field. There will be a row of tents with worktables available for your use in pre-launch rocket preparations, or you may operate out of your vehicle or a tent that you set up next to your vehicle.

Time Management. Each team will be assigned a one-hour "launch window," preceded by a one hour "prep window". **These time assignments will be posted on our website www.rocketcontest.org no later than May 7, 2010, and are not negotiable. You must fly during your assigned window.** Between 18 and 24 teams will be assigned to each one-hour window period, and each may fly at any time during that period. You will not be allowed to set up your rocket or launch system on the flying range until your prep window time slot begins, the hour before the launch window. You should plan to be issued your egg and to present your rocket to us for pre-flight safety and rules-compliance inspection prior to this prep window. This means that you should plan to be on the flying field at minimum of an hour prior to your prep window (two hours prior to launch window) -- earlier if you still need to do registration on the field because you were not at the Friday evening contestants' meeting. The first launch window will open at 8:30 AM on the fly-off day (with a 7:30 AM prep window), so teams who get assigned this window should be prepared to be on the field by 6:30 AM on Saturday, May 15.

You must fly your rocket during the one hour launch window, and will be disqualified and must clear the pad if you fail to achieve liftoff during this window. Misfires are not an excuse for missing an assigned launch window -- so do not wait until the last moments of your window to fly.

The top 20 teams based on scores from first flights (all of which must be completed by 1:30 PM) will be asked to make a second flight during a final “flyoff” round to be held between 3:00 PM and 4:00 PM. These 20 will include the 5 teams who each had the best score in their respective initial flight round, plus the 15 next best teams overall. These 20 teams will be notified as soon as possible after 1:30 PM. The top 20 places in TARC 2010 will be awarded to these teams, ranked on the basis of the SUM of the scores from their two flights. Any team among the 20 that cannot make a second flight will be ranked behind all teams that do make a second flight. The remaining places below 20th will be ranked on the basis of first flights only.

We will invite the teams that finished 21st through 25th to make an unofficial second flight between 4 PM and 4:30 PM as a demonstration flight for the benefit of VIP visitors who may have arrived late in the afternoon for the award ceremony after the competition flights were completed.

Students Only. All elements of rocket design, preparation, and flight are to be done by student members of teams. Only student team members -- no teachers, mentors, parents, or non-team members -- may go into the team checkin area, onto the flying field, pad, or approach the pad which includes assisting with rocket preparations before flight. Anyone can help on recovery if the rocket drifts outside the main flying field area.

Primary and Backup Models. We recommend that you bring two models to the fly-off, if possible. If your primary model's egg section lands in a tree, power line, or other dangerous place where it is visible to the judges but cannot be recovered safely, or if you

experience a rocket engine catastrophic failure as judged by the Range Safety Officer (burst engine or complete failure of the ejection system, with the cap still retained in place on the ejection charge), or if you have an altimeter failure (an altitude reading of greater than zero but less than 50 feet after a normal qualified flight) the judges may allow you to have a second flight. Otherwise only one flight attempt is allowed. If a rocket clears the pad and becomes airborne, this is considered a "flight attempt". If there are any "backup" flights allowed, there will be a few time slots reserved for this purpose in the last first-flight launch window of the day (12:30-1:30 PM).

Equipment. The launch system provided for contestant use will have individually-assigned, well-spaced pads with a single, 6-foot-long, 1/4-inch diameter launch rod on an adjustable pivot and one pair of high-current 12-volt electrical igniter leads with a single pair of micro-clips at the end. These will provide 18 amperes from our launch system from a car battery through 60 feet of 16-gauge wire, which will light any igniter or cluster of up to 4 igniters. Teams are not required to use the launch system and rod that we provide. They may bring their own launch pads, towers, rails, or other hardware, "clip whips" to light clusters of motors from our single pair of micro-clips on the ignition wires, and even their own electrical launch systems if they need anything different from what we provide. Such individual launch systems must comply with the NAR Safety Code requirements and will be subject to our safety check and approval. A minimum rod diameter of ¼ inch and rod/rail length of 6 feet is required.

Returns. All teams that have a safe and otherwise qualified flight must return the section of their model that contains the egg and altimeter to the "Returns Table" for post-flight inspection of the egg and recording of altimeter reading. This must be done no later than 2:00 PM for first flights, which is 30 minutes after the final "launch window" for the first-flight rounds closes; and it must be done by 4:30 PM for flights from the final flyoff round. We will have several 35-foot extendable poles available to assist teams in plucking rockets from trees if this unfortunate circumstance occurs.

NAR MEMBERSHIP AND INSURANCE

You are not required to be a member of the National Association of Rocketry to participate in this contest as a teacher or team member. But we certainly encourage membership, and you may need to become a member if you need insurance coverage for rocket flying in addition to whatever coverage may be provided by your personal insurance.

Your NAR membership includes personal liability insurance to cover YOU against liability claims from rocket activities conducted in strict accordance with the NAR Safety Code. This individual insurance does not cover others (such as your school or the owner of your launch site.)

If your school, school district, or other landowner of your rocket launch site requires liability insurance, your team can obtain "site owner insurance" coverage for this potential liability by having your teacher and at least three student members of the team members join the NAR and then having the teacher order "site owner insurance" from NAR Headquarters. This insurance is not available to provide personal coverage for school officials, only for the legal owner of launch sites. This additional coverage costs $15 per entity insured and requires filling out either an online form or a mail-in form, both available at the Team America section of the NAR website.

ROCKET DESIGN AND CONSTRUCTION.

First and foremost, read the Model Rocket Safety Code of the NAR, and the Team America rules, very carefully. These answer many questions about what is allowable and what is not. We have been asked many questions of interpretation, and have provided answers both individually and via the FAQ on the website. If you are in doubt about your design's compliance with our rules, it is better to ask us early than to find out at the fly-off that what you did is not allowable. Remember that your rocket cannot weigh more than 1000 grams at liftoff (with egg and rocket engines), or contain more than 80.0 Newton-seconds of total impulse in total in all of its rocket engines.

Some of the common topics of questions we have been asked about rocket designs have been:

Design Changes. You are free to change your team's design in any manner that you wish up until the moment you check in at the fly-off. You are not required to use the same design that you flew for your "qualification" flight. But if you plan to fly a new rocket design at the fly-offs, it must have been test flown before the flyoff. All rockets flown at the flyoff must have been test-flown previously.

Engine Selection. You cannot use G power class engines! Make sure that you have or can get the rocket engines you plan to use with your design at the fly-off, or change your design to suit the engines that you can get. Many teams are having problems with very slow liftoffs that make their rocket vulnerable to tipping over in flight ("weathercocking") in windy conditions. This is the result of an inadequate thrust-to-weight ratio for the rocket. If the average thrust of your engine(s) in Newtons (the unit of measurement of thrust that is labeled on the engine) is not greater than 20 times the liftoff weight of the rocket in pounds, then your rocket is underpowered and may weathercock. For example if you are using 3 Estes D12 engines, the average thrust is 3 x 12 = 36 Newtons. 36 divided by 20 is 1.8, so this cluster of three engines should provide enough thrust for safe liftoff of a rocket weighing up to 1.8 pounds. One D12 cannot safely lift more than 0.6 pounds. This is a rough rule of thumb for your use in safe rocket design, not a rule that we will enforce at the fly-offs.

Staging. Use of more than one stage is not permitted.

Commercial vs Custom Parts. The flight vehicle must be made by the student team members. You may use commercially-available "off the shelf" component parts (body tubes, nose cones, egg capsules, etc.) and may adapt rocket kits for the event -- or you can scratch-build components if you prefer. If some company should release a kit specifically for this event or for the NAR "Eggloft" contest event you would not be allowed to use such a kit. Having a custom flight vehicle part fabricated by a composite or plastics company or custom wood machining company (even if it is to your design) does not constitute sale of a "standard off the-shelf product" and is not allowed. Having a mandrel fabricated to your specifications that you wrap fiberglass on to make your rocket body (for example) would be OK. In this case the company is making a tool that you are using, but you are making the part that flies**.**

Metal Parts. You may only use non-metal parts for the nose, body, and fins of your rocket, those parts that are the main structure of the vehicle. Fiberglass is OK. You may use miscellaneous metal hardware items such as screws, snap links, engine hooks, electronic circuit

boards, and (if you wish) commercial re-loadable metal rocket engine casings.

Recovery. Your rocket may be recovered in several separate sections if you wish. The part that contains the egg and altimeter must use a streamer for recovery; other parts of the rocket may return separately and may use parachutes. Time will be recorded from the moment of liftoff to the moment that the first part of the portion of the rocket containing the egg touches the ground, ceases its descent (e.g. lands in a tree), or disappears from the sight of the timers. We will ask a student team member to stand with our timers to identify which section of the descending rocket contains the egg and should be timed. Each section or piece of the rocket must come down safely. A heavy piece (nose cone, body section, rocket engine casing, etc.) that falls to earth in a stable, non-tumbling/non-gliding mode at high speed without a recovery system of some kind at any point in its recovery phase is not safe, and flights that have this happen will be disqualified for being unsafe. Note in particular that having a rocket engine casing pop out of your rocket in flight and fall separately without a recovery system, or separating the entire recovery system from the rocket during flight will result in a disqualification. The only part that must be returned to the event officials after the flight is the part with the egg and the altimeter.

Rockets may not be controlled by human intervention; radio control is prohibited. If your rocket communicates with a ground-based computer during flight this computer must be handed over for custody to a designated event official during the rocket's flight and cannot be touched by a team member during the flight. Flight control systems carried onboard the rocket such as electronic or other forms of timers, altimeters, etc. that control duration in some safe manner are permitted. They may not use pyrotechnic charges (black powder, pyrodex, or small rocket motors). If they are designed to sense acceleration or deceleration of the rocket as the basis for starting an ignition or ejection sequence through an igniter or other trigger, then there is a great risk that they can trigger on the ground or in your hands if you drop or jog the rocket while carrying it. Such systems must have a power switch, plug, or other disconnect mechanism that permits you to maintain them in a completely "safe" configuration until they are placed on the launching pad, and will not be allowed to fly if they do not.

The field for the fly-off is not huge (see the site map posted on the www.rocketcontest.org website), so be judicious in your choice of recovery system size; if you deploy a large parachute and there is much wind on fly-off day, you could be watching your rocket's egg section land in the top of a tree and be forced to use your backup rocket for a second flight attempt. We will have some 35 foot poles to help pluck rockets out of the lower portions of trees, if you are unlucky on landing.

Streamers. Here is what the rules for TARC 2010 say:

" … The portion of the rocket containing the egg and altimeter must return to the ground using only one or more streamers as its deployed recovery system. The rest of the rocket may be attached to this portion, or may return separately as long as it does so safely. Each streamer that is used must be a separate single rectangular strip of thin flexible material such as paper or plastic that is at least five times as long as wide, and each must be attached to the rocket only by a single line that connects to one or more places on a single one of that streamer's narrow sides."

The use of streamers is new in TARC 2010, and there have been some very creative approaches used or considered. Here are some guidelines for what is OK and what is not.

It is OK to:

- Use two or more separate streamers, attached at different points on the rocket or at the same point
- Use a thin wire, dowel, or some tape to stiffen and strengthen the leading edge of the streamer, which is the narrow end where the line is attached
- Put two completely separate streamers side-by-side on a thin dowel that is then connected to the rocket by a single line
- Use thin tape of the same material as the streamer (e.g. mylar) along the side edges of the front part of the streamer to reduce its tendency to rip
- Make a streamer of two or more pieces of exactly the same material, glued, sewed, or heat-sealed together with a minimal seam in the interest of making a single long strip
- Use a two-point connection "yoke" (a line that is connected to each of the two ends of the streamer leading edge or to two points on the rocket) as long as this yoke is then connected to a single line that at one end connects to the streamer and at its other end connects to the rocket
- Connect two or more streamers to the same single line between the streamer(s) and the rocket
- Use a textured, rough, fuzzy, wrinkly, or otherwise non-smooth thin material of paper, cloth, or plastic for the streamer as long as it is not made up of a structured material that gives it three dimensional characteristics, or made of a rigid material
- Bend, fold, crease, curl, iron, or otherwise perform origami on the thin sheet of material that the streamer is made of, as long as its rectangular outline is maintained and the material could be made perfectly flat again by stretching or ironing.

It is <u>NOT</u> OK to:

- Attach the streamer's line to the mid-point of a long unbroken strip of material and call this two separate streamers
- Tack spots together on the streamer or connect lines to each end of it in order to make it "catch air" and act parachute-like
- Cut slits in the outer profile of the streamer that keep it from being an unbroken rectangle in shape
- Add flaps, cups, or other protrusions on the surface of the streamer; it is supposed to be a thin one-layer two-dimensional sheet of flexible material
- Cut a wide streamer into separate narrower ones partway down the length of the streamer
- Pass a line from one point on the rocket to the streamer and then to another point on the rocket so the streamer is really attached to a loop on the rocket. There has to be a place where only a single strand of line is between the streamer (or collection of separate streamers) and the rocket

Aerospace Industries Association
1000 Wilson Blvd. #1700
Arlington, VA 22209

MEMORANDUM FOR AIRLINES AND TRANSPORTATION SECURITY ADMINISTRATION

Subject: Traveling with Rocket Models

The Aerospace Industries Association, trade association for the U.S. aerospace industry, and the National Association of Rocketry, the nation's non-profit educational organization for hobby rocket consumers, are co-sponsoring a national model rocket contest for secondary school teams on May 15, 2010, in The Plains, VA, near Washington, DC. Other partners of this contest include NASA and numerous aerospace companies. This event, called the Team America Rocketry Challenge, is the largest model rocket contest ever held; it has involved over 6,000 secondary school students on 669 teams from schools in 45 states.

The 100 best of the 669 rocketry teams from around the U.S. have been invited to travel and bring their rockets their rockets to compete in the final fly-off for selecting the national winners of the Team America Rocketry Challenge on May 15. The fly-off will be attended by senior NASA executives, Members of Congress, and the national media.

In order to attend the fly-off, many of the high school teams must fly to airports near Washington, DC. They must travel carrying the model rockets that they have worked so hard over the last year to design, build, and flight test. Their rockets are made of non-metallic materials: paper, plastic, and balsa wood. They are non-explosive and completely inert. The expendable single-use commercially-made model rocket engines that power them (which contain the only flammable materials in the rocket when it flies) are being provided upon their arrival. These cannot be shipped on aircraft.

Model rockets not containing engines are perfectly safe and inert, and bringing them onboard an aircraft does not violate any Federal regulations. If you have questions, please contact Audrey Koehler at the Aerospace Industries Association during business hours at (703) 358-1033.

INSTRUCTIONS FOR FILLING OUT THE PRESS RELEASE

Congratulations on making the Team America Rocketry Challenge finals! We are looking forward to working with you to help generate support for your team's trip to compete in the final fly-off. A great way to spread the word about how you'll be representing your hometown at the finals on May 15 is to reach out to your local newspapers, television and radio stations.

A **press release** is enclosed to complete and send to your local media. You may want to assign one student on your team to be the **Team Press Liaison**, who will be responsible for filling out and distributing the release, and making arrangements for local press to come and interview your team. Contact information for submitting news is typically available online at the newspaper or station's Web site.

You may want to include quotes from team members, add a photograph of the team at work on its model rocket, or invite the media to a classroom work session or test launch. AIA is reaching out to national media outlets about the TARC finals, but we need your help keeping your local media and school newspaper informed about your team's progress.

See the following example on the next page for the press release. The highlighted words need to be changed to reflect your town, high school and team names. Please send us any articles or other media coverage.

Team America Rocketry Challenge Contact:
Audrey Koehler, audrey.koehler@aia-aerospace.org, 703-358-1033

Sample News Release

FOR IMMEDIATE RELEASE
April XX, 2010

Contact: [Mentor Teacher/Student Name]
[Mentor Teacher/Student E-mail, Phone]

***Great Visuals and Photo Opportunities Available**

Students At [School/Organization Name] Qualify For World's Largest Rocket Contest National Finals

[TARC Team Name] of [School/Organization Name] Named Among Top 100 Teams To Compete in Team America Rocketry Challenge National Finals on May 16 Outside of Washington, DC

[City, State]—[TARC Team Name] at [Organization/School Name] will compete in the National Finals of the world's largest rocket contest after qualifying among the top 100 teams in April, beating out the scores of 669 other participating student teams from across the country. The team will now travel to compete in the final fly-off of the Team America Rocketry Challenge (TARC) on Saturday, May 15, outside of Washington, DC.

The contest challenges middle and high school students across the country to design and build a rocket that will climb to 825 feet and stay aloft for between 40 and 45 seconds using a streamer for a recovery device. Teams must also transport a payload of one egg in their rocket and return it unbroken. Students compete for $60,000 in prizes and scholarships, as well as a chance to compete nationally at the finals held at Great Meadow in The Plains, Va. (near Washington, D.C.). The winning team also earns the chance to attend the International Airshow in Farnborough, England.

[Include information about your organization's history with the contest- how many years has a team participated? Have any of the teams made it to the final fly-offs? Won the competition?]

About 7,000 students from across the country took part in the contest last year. Since TARC's first contest in 2003, over 50,000 students have participated in the challenge. The Aerospace Industries Association sponsors the contest with the National Association of Rocketry, NASA, the U.S. Department of Defense, the American Association of Physics Teachers and AIA member companies.

"TARC is a great way for students to get real aerospace engineering experience, and it's also a lot of fun," said Marion Blakey, president and CEO of the Aerospace Industries Association. "We are delighted [TARC Team Name] has joined this important effort."

TARC is aimed at attracting students to science, math and technology education and, ultimately, careers in the aerospace industry. With nearly 60 percent of the aerospace workforce over the age of 50, AIA and other industry leaders hope to spark the interest of future aerospace engineers with programs like TARC. For more information about the Team America Rocketry Challenge visit www.rocketcontest.org.

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[Organization/School's "About Us" Statement]